Richardson & Robbins Cannery, 1881
King and Reed Streets
Dover
Kent County
Delaware

HAER DE-3

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
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HISTORIC AMERICAN ENGINEERING RECORD

Richardson & Robbins Cannery

HAER DE-3

Location:	Dover, Delaware. UTM: 18.454750.4334450 Quad: Dover
Date of Construction:	1881, with additions.
Present Owner:	Wesleyan College
Significance:	Richardson & Robbins, founded in 1856, was the first cannery in the state of Delaware, and a pioneer in the American canning industry. Specializing in the processing and canning of food delicacies such as boned hams and poultry, fancy fruits, and plum pudding, Richardson & Robbins and the R & R label earned an international reputation for quality. The present canning establishment includes the brick cannery building erected in 1881. Though now largely unused, the structure reflects the organization of the canning process in the 19th and early 20th centuries.
Historian:	Raymond W. Smith, 1976.

Introduction

The coastal region of the middle Atlantic states became the cradle of the canning industry in America in the 1840s, and remained important in this industry throughout the 19th century. Southern New Jersey, Delaware, and the eastern shore of Maryland possessed the unique combination of qualities necessary to insure the success of commercial canning on an industrial scale. All were favored as agricultural regions with excellent soil and climate, which yielded abundant annual crops of fruits and vegetables (notably peaches and tomatoes). However, the distance of this bountiful area from major cities, coupled with the lack of rail transportation on the Delaware Peninsula, meant spoilage and difficulty in marketing fresh produce, and frequent market gluts. Hence, canning fruits and vegetables where they were grown seemed a promising means for tapping the lucrative urban markets. The shellfish and poultry of the Delaware and Chesapeake region were likewise available in volume sufficient to keep a commercial cannery from being idle during winter months. [1] Therefore, because of the advantages of location, many pioneer canners established packing houses in this region during the second half of the 19th century. One such enterprising individual was Alden B. Richardson.

Growth of a Partnership

Alden B. Richardson (1825-1894) was born in South Reading, Massachusetts, and as a youth apprenticed himself to a tinmaker at New Bedford. [Photo DE-3-15] On completion of his 7-year apprenticeship, Richardson migrated south to Wilmington, Delaware, where in 1849 he established his own stove and tinware business. Two years later, Richardson moved his business to Camden, Delaware, and about 1853, he finally settled at Dover. Here he conducted his business in stoves and tinware from a building at the intersection of Bradford and Loockerman Streets. Sensing the potential for success in the Dover enterprise, Richardson hired a journeyman tinsmith from Smyrna, one James Washington Robbins (1831-1876), to assist him.[2] [Photo DE-3-16]

As early as 1847, Richardson had begun to experiment with "appertizing," or packing food in airtight containers made of tinplate. His interest continued after to move to Dover, though success proved elusive. A local historian has noted that large piles of twisted food containers behind the Loockerman Street shop in the early 1850s attested to the numerous failures which Richardson experienced. [3]

These new culinary experiments began as a means for promoting and demonstrating a "common cook stove" to prospective customers about 1853. Richardson and Robbins finally succeeded in packing local peaches and berries in 1855. They were the second American canning firm to perfect the technique using tinplate cans. [4]

Public interest in their efforts led the 2 men to abandon the tinware business and form a partnership for packing and marketing canned goods. In 1856, Richardson & Robbins sold their first commercial pack of 600 cans of fruit. Demand for their product was so great that by 1857 the partners had increased their output to 1800 cans, and by 1858 to 9000, all the while relying entirely upon their original cook stove. [5]

Alden Richardson and James Robbins soon recognized the handicap which their existing facilities placed upon them. By building a specialized heater for cooking larger "batches" of cans, they increased their production to 20,000 cans in 1859. [6] [Photo DE-3-21] Success and the popular clamor for canned foods outstripped even this expansion. Larger facilities became imperative, so Richardson and Robbins moved their business to a building on Pryor Street, where they installed a 2-horsepower steam boiler and packed 40,000 cans in 1862. Still incapable of meeting demand, in 1863 the partners relocated to a large brick structure at the corner of State and King Streets known as the "Reporter Building". This structure lent itself to internal expansion, and remained the Richardson & Robbins cannery for 17 years. [7] [Photo DE-3-17] By successively increasing the capacity of its steam boiling apparatus over time (8-25-40-80 horsepower), the packing house was able to process ever larger batches of canned goods using steam heat, and in this way met the rapidly growing demand for its canned goods. [8]

As Richardson & Robbins grew, there gradually evolved a division of labor between the founding partners. Alden B. Richardson took charge of the packing, processing, and mechanical aspects of the canning operation; James Robbins assumed the managerial, administrative and sales functions of the firm's "outside man". [9] In their respective capacities the two partners maintained an ideal working relationship until the untimely death of James Robbins in 1876. At that time, Harry A. Richardson entered into partnership with his father, performing the same functions as had Robbins. [10] The company remained active under Richardson family ownership and control from 1876 until 1959, when Richardson & Robbins became a division of William Underwood Company.

While located at State and King Streets, Richardson & Robbins expanded its product line along with its productive capacity. Almost from its beginning the firm specialized in packing and processing luxury canned goods. Fruits out of season were a delicacy much in demand among wealthy urban dwellers after the Civil War. Richardson & Robbins capitalized on its ideal Kent County location:

> Being situated in the finest fruit growing section in the United States, we are able to obtain our fruit in the highest state of perfection. Packed where it is allowed to ripen on the trees, it is much superior to fruit packed in cities, which is packed two or three days before it is ripe, and transported long distances.

Delaware freestone peaches were an early specialty canned at Dover. The firm also pioneered in canning meat and poultry products. It was the first packing house in the United States to can boned chicken and turkey in 1865. By 1914 Richardson & Robbins ranked among the largest poultry canners in the world. [12]

Another meat specialty of Richardson & Robbins was the boneless ham, packed in the distinctive ham can still used today. Alden B. Richardson patented this can design in 1876, and he developed the process for packing cooked hams in "hermetically sealed" cans. [Photo DE-3-27] Cooked outside the can, hams were boned and packed in cans of tinplate. The cans were then soldered and sealed, and "processed" in steam vats. Processing caused the hams to expand to the dimensions of the can, filling it tightly. The novelty of this ham process won Richardson & Robbins a gold medal at the Centennial Exposition at Philadelphia in 1876. [13]

Other luxury products, notably plum pudding, became part of the Richardson & Robbins line during the 1870s. The firm received many additional awards for product exhibits at expositions into the next century. Gold medals were awarded at the Paris Expositions of 1878, 1889, and 1900; the London Food Exposition of 1880; and the Panama Pacific Exposition held at San Francisco in 1915. [14]

International awards stimulated foreign demand for canned delicacies of Richardson & Robbins. The firm's prestigious position is discernible in contemporary accounts. A writer in 1880 observed that "the existence and operations of this one concern for the past twenty-five years have probably done more than any other business on the peninsula to spread abroad the name of Delaware, and to acquaint the people of the world with its special productions." A writer in 1914 noted, "the enormous output of its varied products find ready sale in every civilized market of the universe." [15]

Quality products and marketing skills gave Richardson & Robbins an advantage even over European competitors selling canned delicacies on the Continent. A case in point is "R & R" chicken liver pate. The company exported this product to France, where in 1882 it sold for less than half the price of its French equivalent. By maintaining a similar price ratio on its other products, Richardson & Robbins prospered in the export market, as well as at home.[16] In its catalogue, Richardson & Robbins maintained, "We make no pretensions of selling cheap; but our endeavor is to use the best materials, and sell as low as we can afford." [17] In their chosen market sector, the Dover canners achieved notable success. At one time or another, the R & R label appeared on rolled ox tongues, boned hams, turkey, and chicken, "galatines of game and poultry," truffled chicken livers, tomatoes, plum pudding, and fancy fruits in great variety. [18]

With commercial success, Richardson & Robbins again had to expand its facilities. In 1881, the company selected a 9-acre plot with frontage on King Street in Dover, where it erected a two-story brick cannery that remained standing in 1976. [Photos DE-1 through 3] The company razed its earlier cannery at State and King Streets, and in 1881-82, the luxurious Hotel Richardson (now demolished) was constructed on the site. Ever the entrepreneur, Alden B. Richardson managed the hotel with his son Harry, and he organized the Dover Gas Company. All this was in addition to his continuing duties as chief processor at the family cannery. [19]

The King Street cannery of 1881 greatly enlarged the productive capacity of Richardson & Robbins. As the firm rose to pre-eminence in the canning specialties, poultry and plum pudding, it also became Dover's principal industrial employer. Richardson & Robbins employed 100 workers (men and women) full time, with seasonal increases during the peach harvest time. [20] Generations of Dover families have worked at the cannery, and it has remained a major Dover industry since the 1880s.

The success of Richardson & Robbins in Kent County encouraged other canners to establish packing houses in Delaware and the Delmarva Peninsula. Fruits and vegetables continued to dominate its luxury sphere. The 1860s witnessed the establishment of canning plants at Camden (Stetson & Ellison) and at Smyrna (Hoffecker Brothers). During the 1870s and 1880s, new canneries at Rising Sun, Seaford, Odessa, and Milford began packing produce. By 1914 there were 130 canneries in Delaware, and 450 throughout the peninsula. [21]

Structural and Technical History

Richardson & Robbins frequently expanded its physical plant in response to the ever-increasing demand for canned foods in the latter half of the 19th century. From the tin-shop at Bradford and Loockerman Streets, to Pryor Street, to the cannery at State and King, to the King Street cannery of 1881, Richardson & Robbins relocated when its needs outgrew its existing facilities.

The brick cannery on King Street was the final site occupied by the transient firm in the 19th century. [Photo DE-3-19] Though the internal configuration of the structure was altered repeatedly during its years of active use, the entire canning operation was always housed beneath a single roof. Within the two-story brick building were offices, rooms for receiving, cleaning of produce, refrigeration, filling, processing, labelling, and storage; a can-making shop, machine shop, and steam engine/boiler house. [22] Numerous interior alterations such as bricked-in windows and doors attest to the partitioning of the cannery's workrooms as the operation expanded or changed.

Two major additions to the Richardson & Robbins complex were made between 1904 and 1910. At that time, the firm undertook the large-scale packing of tomatoes, and toward this end, it added a wing (with attached receiving and loading dock) to the southeast portion of the 1881 structure. [23] Here local farm vehicles delivered produce, and the tomato canning process was conducted entirely within this specialized wing of the factory.

The decision to devote the 1881 structure exclusively to the packing of R & R specialties, canned poultry and plum pudding, was made at the time the tomato wing was built. This necessitated the second major addition in the early 20th century, a separate building housing the main office of Richardson & Robbins and an attached warehouse for storing cases of finished canned goods awaiting shipment. This elongated brick structure was erected on the north side of the 1881 building, and parallel to it, fronting on King Street. [24] [Photo/ De-3-5]

The next major alteration to the Richardson & Robbins cannery came in response to the demand for military "C" rations brought on by the Second World War. In 1941 Richardson & Robbins ceased canning tomatoes, and the tomato canning facility was razed. In its place on the south side of the 1881 facility, the company began construction of a modern poultry canning plant. With the completion of this new structure and a modern refrigeration room in 1947, use of the brick building of 1881 gradually diminished. [25] When Richardson & Robbins became a division of William Underwood Company in 1959, all existing canning equipment and machinery in the 1881 structure was removed, and the packing of Underwood chicken spread was concentrated in the 1941 plant. The second floor of the old cannery is largely vacant. The lower floor is used as cooling and storage space for canned meat products packed in the newer facility.

The two requirements for a successful canning operation were a local source of produce and an abundant supply of tinplate. With rare exceptions, canneries such as Richardson & Robbins manufactured their own cans within their factories during the 19th century (a practice R & R continued until 1941). [26] Two second-floor rooms at the rear of the 1881 cannery were devoted exclusively to can-making, and 2 adjoining rooms provided storage for tinplate stock and finished cans. [27]

Throughout most of the 19th century, can-making was a labor-intensive hand process. The can body was measured and marked on tinplate, then cut with shears. Ends were similarly marked, and cut with circular tinsnips. The body was shaped on a cylindrical mandrel. Flux and solder were applied to the seam, and heated by running a tinner's soldering iron along the joint. The can ends were crimped to fit using a mallet and iron "heading stake,"

and the tops and bottoms were finally hand-soldered to the completed body once removed from the mandrel. [28] Though gang-slitting machines were adopted around 1900 by Richardson & Robbins and others to speed this work, can-making nevertheless remained a hand process for many years. To avoid production delays caused by slow hand work, Richardson & Robbins made and stockpiled cans during the winter months when packing activities slowed. This assured a sufficient supply for the peak poultry and plum pudding canning seasons. [29]

The can-making room in the King Street complex reflects the organization of that work. Work benches were arranged around the room's perimeter beneath the windows for optimal light. The soldering process relied on heat from a gas system, the pipes running beneath the work tables. [Photo DE-3-13] Richardson & Robbins took pride in the fact that "as no solder is used on the inside of the cans their contents can be preserved in a perfectly fresh condition for any length of time." [30]

Early cans used by Richardson & Robbins and similar packing houses were of the "hole and cap," "stud hole," or "solder top" type, each having a hole 1-1/2 inches or larger for filling through the top. Once filled, a can was sealed by hand-soldering a cap over the hole. [Photo DE-3-24] The filled can was then cooked in steam vats or retorts. Depending upon the product being packed, a vent hole might be pierced in the cap to exhaust excess air after cooking. The hole would then be spot-soldered and the can cooked in the final "process" of a batch. [31]

A can-making innovation of major significance is attributable to Richardson & Robbins. During the mid-1880s, the company began to market its products in an "hermetically sealed" vacuum can which opened with a key. R & R appears to have originated the key-opened can (though it did not hold the patent rights). They used the key device on distinctive, tapered-body cans for many years. [32]

The can making and capping processes at R & R were largely mechanized during the 1920s. [33] Formerly, can making and packing machinery consisted largely of equipment designed to solve the particular production problems of the individual cannery. Machines were supplied in standard models from the 1880s, but they were invariably modified when installed by the cannery's chief mechanic. Alden B. Richardson is reputed to have been particularly adept at modifications.

With the growth of industry-wide standards for cans and their manufacture, major canning firms by the 1920s were relying on equipment built by firms such as the Max Ams Company of Mount Vernon, New York, the industry's early leader. Among the Max Ams machines used by Richardson & Robbins were a can body-making machine, a No. 490 Single Spindle Double Seamer (which crimped joints), a No. 68

Closing Machine, and 2 No. 128G Closing Machines (which R & R purchased second-hand in 1928). [34] The elimination of hand soldering, the bane of the canning industry since its early years, meant great increases in the productive output of canneries such as Richardson & Robbins in the 20th century.

The Canning Process

The canning operation conducted by Richardson & Robbins in the late 19th and early 20th centuries corresponded closely to general practice throughout the industry, and yet allowed for the unique characteristics of poultry packing. Successful canning required:

1. Thorough cleaning and washing of the raw food;
2. Blanching and cooking--arrests enzyme action and precooks poultry outside the can;
3. Deboning by hand;
4. Filling--packing the cans;
5. Evacuating filled cans of excess air by heat, or mechanically;
6. Capping, or "hermetic sealing";
7. Processing--steam heating of sealed cans to stabilize and sterilize food contents (time of the "process" varies with the product and size of the container);
8. Cooling;
9. Labeling and casing. [35] [Photo DE-3-28]

The process flow within the Richardson & Robbins cannery occurred in the following manner. Area farmers brought poultry or produce to the cannery directly. A line of wagons would form during the early hours of morning. [36] [Photo DE-3-20 top] Live poultry was delivered through the large double doors on the north side of the cannery building. [Photo DE-3-2] Once inside, the birds were killed, mechanically defeathered, and eviscerated by hand in the first floor "drawing room." [37] Cooking outside the can in boiling vats occurred next. From there, cooked poultry was deboned by hand in the meat room located on the first floor. Once deboned, the bulk meat was raised to the upper floor filling room using the mechanical elevator located at the center of the cannery. Cans were packed and filled by hand [Photo DE-3-22] in the filling room [Photo DE-3-12]; and placed in palletized steel baskets [Photo DE-3-14]. Each basket-load, or batch, was lowered using a hoist into an individual open steam vat to process. Processing sterilized the can contents. When removed from the vats, cans were transported on wheeled handcarts to the cooling room at the front of the building. [Photo DE-3-25],

then lowered on the front elevator to the carting and storage room below. Here the finished canned goods were stored until shipped out via the large double doors opening onto King Street. [38]

The power to run the plant's machinery was provided by a coal-fired 55-horsepower Providence steam engine located in a brick engine house attached to the rear of the cannery. Here also were located the boilers from which steam to heat the processing vats was piped to the second floor of the main structure. [Photo DE-3-4]

General maintenance and the making of such things as specialized machine parts, fittings, and mandrels for cans were done in the plant's machine shop, located since about 1910 in a small room on the second floor of the plant. [Photo DE-3-7, 8] Tools in the shop included an Aurora drill press (Aurora Tool Works, Aurora, Indiana) [Photo DE-3-10]; a back-geared engine lathe (Charles Fifield, Lowell, Massachusetts) [Photo DE-3-9]; a smaller bench lathe; a metal shaping machine [Photo DE-3-11]; and 2 grinding machines. All were driven by overhead shafts and pulleys by leather belts. The power source for the entire shop was a gas engine located in the machine shop. An exhaust pipe led from the engine through the shop wall to disperse fumes outdoors. This machine shop remained in place in 1976, and all tools, though unused, were in operable condition. While not unique, the machine shop was a remarkable survival significant for showing the placement of machine tools.

NOTES

[1] Cecil C. Fulton, Jr., "Historically Speaking. . .Richardson & Robbins," The Red Devil I, 2 (August 1968), 7; Edward F. Keuchel, "Master of the Art of Canning: Baltimore, 1860-1900," Maryland Historical Magazine, LXVII, 4 (Winter 1972), 355.

[2] J. M. McCarter and B. F. Jackson, eds., Historical and Biographical Encyclopaedia of Delaware (Wilmington, 1882), p. 345.

[3] Ibid., p. 186; Fulton, 7.

[4] "A Big Industry," Wilmington Morning News, 13 February 1882, p. 1; Fulton, Ibid. The first commercial success in canning fruit was scored by the Baltimore firm of Thomas J. Myer & Company in the early 1850s; See Hugh S. Orem, "Baltimore: Master of the Art of Canning," in A History of the Canning Industry by its Most Prominent Men, ed. by Arthur I. Judge (Baltimore, 1914), p. 9.

[5] McCarter and Jackson, p. 186.

[6] Ibid.

[7] J. Thomas Scharf, History of Delaware, 1609-1888 (Philadelphia, 1888), Vol II, p. 1095; Richard Edwards, ed., Industries of Delaware; Historical and Descriptive Review (Wilmington, 1880), p. 131. The building was 225 feet long, with an average width of 70 feet.

[8] Wilmington Morning News, 13 February 1882, p. 1; McCarter and Jackson, p. 186. The partners processed 100,000 cans during their first year in the larger building.

[9] McCarter and Jackson, p. 413.

[10] Ibid., p. 186; Scharf, Vol. II, p. 1075.

[11] Catalogue of Richardson & Robbins, Dover, Delaware (Boston, n.d. [c. 1876]), p. 3; Earl Chapin May, The Canning Clan (New York, 1937), p. 223.

[12] Charles T. Lee, " A History of the Canned Meat Industry," Judge, History of the Canning Industry, p. 41. R & R was thus among the first half dozen American meat packing firms, following closely upon the success of William Underwood Company (1845) and Rumery & Burnham (1852).

[13] U. S. Patent Office, "A. B. Richardson, Method of Preparing Canned Hams," No. 175, 757 (4 April 1876); U. S. Patent Office, Official Gazette, IX, 4 April 1876 (Washington, 1877), p. 676; "For Underwood's Family of Labels. . .World's Fair Medals Record a Tradition of Excellence," The Red Devil, II, 3 (December 1969), p. 4.

[14] Ibid.; also McCarter and Jackson, p. 187.

[15] Edwards, p. 131; Albert W. Sisk, "A Brief History of the Canning Industry on the Peninsula of Maryland and Delaware," Judge, History of the Canning Industry, p. 77.

[16] Wilmington Morning News, 13 February 1882, p. 1.

[17] Catalogue of Richardson & Robbins, p. 3.

[18] Ibid., pp. 5-11; McCarter and Jackson, p. 187.

[19] McCarter and Jackson, p. 345; Scharf, Vol. II, pp. 1069, 1075; Fulton, 7.

[20] Edwards, p. 131.

[21] May, p. 223; Sisk, in Judge, History of the Canning Industry, pp. 77-8.

[22] Data derived from Sanborn Insurance Maps, Dover, 1885, 1891, 1897, 1904, 1910 (on deposit, Historical Society of Delaware Library, Wilmington, Delaware).

[23] The Sanborn map of 1910 is the earliest to indicate the tomato cannery.

[24] Ibid.

[25] Oral Interview, Edward W. Richardson, Dover, 24 July 1975 (Raymond W. Smith).

[26] Ibid.

[27] The can shop was always located second floor rear, as confirmed by all existing Sanborn Insurance maps and on-site examination of physical evidence. Cutting and slitting occupied one room, while the other was used for assembling, soldering and testing of cans.

[28] Mary B. Sim, Commercial Canning in New Jersey (Trenton, 1951), pp. 21-2; Thomas Wilson, Notes on Canned Goods, Prepared under the Direction of the Commissary General of Subsistence, U. S. Army (Washington, 1870). pp. 11-13.

[29] Oral Interview, W. P. Maag, Dover, 22 July 1975. Maag recalled that in the early 20th century, poultry was packed from May to September, plum pudding from September to December, and can making and plant maintenance conducted from January to May (Raymond W. Smith).

[30] Edwards, p. 131.

[31] Sim, pp. 21-2.

[32] Patent records indicate that Patent No. 305,680 was issued to a Cuningham Drake of Philadelphia for what was ostensibly the key-opened "hermetically-sealed can," 23 September 1884 (see also Official Gazette, XXVIII (Washington, 1885) p. 1170. No connection has been established between the patentee and Richardson & Robbins. According to oral information supplied by Edward W. Richardson, R & R never secured a patent on the device, and it ultimately was appropriated by American Can Company. Further investigation in this area is necessary. See also, Delaware's Industries: An Historical and Industrial Review (Philadelphia, 1891), Part II, p. 3.

[33] The date is rather late when compared to other canning firms, many of whose experiments with mechanization began in the 1880s. In urban canneries, mechanization generally came as a response to the disruptive activities of organized labor (see Keuchel, 359-62). In Dover, labor problems appear to have been nonexistent and thus no impetus to mechanization at R & R.

[34] Oral Interview, Edward W. Richardson, Dover, 24 July 1975.

[35] National Canners Association, The Canning Industry (Washington 1952) pp. 23-4; James H. Collins, The Story of Canned Foods (New York, 1924), pp. 157-8.

[36] Richardson & Robbins did not employ field purchasing agents, nor did it transport produce to the cannery in its own vehicles.

[37] Live poultry was killed and dressed at the cannery until 1959. Later dressed poultry was purchased from contractors.

[38] Oral Interview, Edward W. Richardson, Dover, 24 July 1975; Analysis of Sanborn insurance maps, Dover, 1885, 1891, 1897, 1904, 1910.

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"A Big Industry," Wilmington Morning News, 13 February 1882, p. 1.

An enlightening period account of Richardson & Robbins and its operations at the time its 1881 cannery was erected.

Can Manufacturers Institute, A Pictorial History of the Metal Can From its Earliest Beginnings to the Present. New York, 1960.

The best source to date for graphic materials depicting the early manufacture of tinplate cans.

Collins, James H., The Story of Canned Foods. New York, 1924.

Touches on technology of food canning in passing. A standard work of limited value.

Judge, Arthur I., A History of the Canning Industry By its Most Prominent Men. Baltimore: The Canning Trade, 1914.

A trade association publication, containing much useful data.

Keuchel, Edward F. "Master of the Art of Canning: Baltimore, 1860-1900," Maryland Historical Magazine, LXVII, 4 (Winter 1972), 351-62.

Largely appropriated from Judge, above, this article underscores the importance of the Delmarva region in nurturing the American canning industry in the 19th century.

May, Earl Chapin, The Canning Clan. New York, 1937.

Highly anecdotal and limited in its scholarly value.

McCarter, J. M., & B. F. Jackson, eds. Historical and Biographical Encyclopaedia of Delaware. Wilmington, 1882.

Contains useful biographical sketches of A.B. Richardson and James W. Robbins, as well as a period sketch of the firm and its history.

National Canners Association, The Canning Industry. Washington, 1952.

Contains useful information on the canning process.

Oral Interview, Edward W. Richardson, Dover, 24 July 1975.

Oral Interview, W. P. Maag, Dover, 22 July 1975.

The Red Devil. The house organ of William Underwood Company, this publication ran frequent articles on Richardson & Robbins and its historic accomplishments, 1968-1973.

Richardson & Robbins, Catalogue of Richardson & Robbins, Dover, Delaware. Boston, n. d. (c. 1876)

Sanborn Insurance Maps, Dover, 1885, 1891, 1897, 1904, 1910. On deposit, Historical Society of Delaware Library, Wilmington, Delaware. Maps indicate the various changes in the cannery over the years, and identify the uses of each room at a given period. For complete documentation of this structure, it is recommended that these maps be photocopied by HAER.

Scharf, J. Thomas, History of Delaware, 1609-1888. 2 vols. Philadelphia, 1888.

Sim, Mary B., Commercial Canning in New Jersey. Trenton, 1951.

Useful data pertaining to the early history of canning in the Middle Atlantic region may be inferred from this work.

In addition to the above works, the following provide contemporary insight into the place of R & R in the Delaware economy of the late 19th century:

Delaware's Industries: An Historical and Industrial Review. Philadelphia, Keighton Printing House, 1891.

A useful period piece.

Edwards, Richard, ed., Industries of Delaware: Historical and Descriptive Review. Wilmington, 1880.

This work undoubtedly grew out of 1880 census data. Like the above work, it gives the historian an excellent insight into the relative significance of various industries in Delaware at the time.